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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/792,189	03/03/2004	Franklin D. Carson	CSI-0036	4921

23377 7590 09/20/2005  
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EXAMINER

EDGAR, RICHARD A

ART UNIT PAPER NUMBER

3745

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/792,189

Applicant(s)

CARSON, FRANKLIN D.

Examiner

Richard Edgar

Art Unit

3745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-20 is/are allowed.
- 6) ☒ Claim(s) 1,2,4,12,21,23,24,30,31 and 33-36 is/are rejected.
- 7) ☒ Claim(s) 3,5-11,22,25-29 and 32 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/5/2004</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 122c (see at least paragraph 0033). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

The disclosure is objected to because of the following informalities:

In paragraph 0031, line 6, "rotation to" should be replaced by -- rotates --.

Appropriate correction is required.

***Claim Objections***

Claims 4, 22 and 33 are objected to because of the following informalities:

In claim 4, "the rotating swash plate" and "the non-rotating swash plate" should be -- a rotating swashplate -- and -- a non-rotating swash plate --. Appropriate correction is required.

In claim 22, line 4, "the mast" should be -- a mast --.

In claim 33, "the hub" should be -- a hub --.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,2,4,12,21,23,24,30,31 and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent No. 2,861,640 (du Pont hereinafter).

Du Pont teaches a rotor head 19 for a rotary-wing aircraft having a plurality of rotor blades 21 and a drive shaft 22, the rotor head comprising: a gimbal 23 mechanically coupled to the drive shaft 22 so that the gimbal rotates with the drive shaft; a hub 25 pivotably coupled to the gimbal 23 for receiving the rotor blades 21; and an actuator 42 mechanically coupled to the hub 25 for causing the hub to pivot about the gimbal (see col. 3, lines 39-57).

Art Unit: 3745

The rotor head further comprises a swash plate assembly (see col. 2, lines 10-41) mechanically coupled to the actuator 42 and the hub so that the actuator exerts a force on the swash plate assembly that causes the hub 25 to pivot about the gimbal 23. The swash plate assembly further comprises a plurality of ball bearings 30 and a rotating swash plate 29 rotates in relation to a non-rotating swash plate 37 by way of the bearings.

The actuator 42 operates to orient the hub 25 in a particular orientation in relation to the drive shaft 22 (e.g. horizontal).

Du Pont also teaches a rotor assembly for a rotary-wing aircraft, comprising: a plurality of rotor blades 21; a drive shaft 22; and a constant velocity joint 23 mechanically coupling the rotor blades to the drive shaft, wherein the constant velocity joint is restrained from pivoting (by controlling the cyclic blade pitch) in relation to the drive shaft by an actuator 42 and a swash plate assembly 29/37.

Du Pont also shows a rotor head for a rotary-wing aircraft having a plurality of rotor blades 21 and a drive shaft 22, the rotor head comprising a gimbal 23 secured to the drive shaft, and a hub 25 comprising a plurality of sleeves 19 for receiving the rotor blades, wherein the hub 25 is mechanically coupled to the gimbal 23 and an actuator 42 and the hub pivots about the gimbal on a selective basis in response to movement of the actuator (see col. 3, lines 39-57).

The rotor head further comprises a swash plate assembly (see col. 2, lines 10-41) mechanically coupled to the actuator 42 and the hub so that the actuator exerts a force on the swash plate assembly that causes the hub 25 to pivot about the gimbal 23.

The actuator 42 operates to orient a hub 25 in a particular orientation in relation to the drive shaft 22 (e.g. horizontal).

Du Pont further discloses a method for controlling an angle between a plane of rotation of rotor blades of a rotary-wing aircraft and a drive shaft that transmits torque to the rotor blades, comprising: providing a constant-velocity joint 23 for mechanically coupling the rotor blades 21 and the drive shaft 22; and causing the rotor blades 21 to pivot in relation to the drive shaft 22 by way of the universal joint 23 using an actuator 42.

The actuator 42 operates to orient the hub 25 in a particular orientation in relation to the drive shaft 22 (e.g. horizontal).

Claims 34-36 are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent No. 2,806,662 (Yonkers hereinafter).

Yonkers discloses a method for operating a rotary-wing aircraft having a fuselage 10, and a plurality of rotor blades 26 mechanically coupled to a hub of a rotor head 25, wherein the rotor blades and the hub rotate in relation to the fuselage, the method comprising altering an angle between a plane of rotation of the rotor blades and the fuselage (see Fig. 2) to achieve a desired airspeed for the rotary-wing aircraft (see col.

1, lines 39-43), and locking a plane of rotation of the rotor blades in a particular orientation in relation to the fuselage using an actuator 53/53a mechanically coupled 52/20 to the hub 25 and a non-rotating component (see Fig. 2) of the rotary-wing aircraft.

***Allowable Subject Matter***

Claims 13-20 are allowed.

Claims 3, 5-11, 22, 25-29 and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 3 and 25 each require the rotating swash plate to be *fixedly* coupled to the hub, but du Pont only shows a *mechanical* coupling through link 38, horn 39, *bearings* 20, casing 19 and hub 25. The use of the bearings 20 in du Pont teaches a coupling which is not fixed.

With respect to claims 5-6, 22, 26-27, du Pont does not teach that the hub pivots by way of ball bearings since the universal joint 23 is only shown with a shaft 24 extending from the joint which connects to the hub 25.

Regarding claims 7-8, 13-20, 28 and 32, du Pont only teaches the use of a hydraulic actuator 42, and not a screw jack or jack screw.

Art Unit: 3745

Concerning claims 9 and 29, du Pont appears to only show an unnumbered nut on the shaft 24 fixing the hub 25 thereon, and not the use of a spring as claimed.

For claim 10, du Pont only shows one swash plate assembly which controls the tilt of the rotor hub as well as the cyclic pitch of the rotor blades, and therefore does not teach a separate swash plate which varies the blade pitch.

Finally, as to claim 11, du Pont does not show an opening in the hub 25 for receiving the gimbal 23, rather the gimbal 23 is positioned between the shafts 22,24.

#### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Edgar whose telephone number is (571) 272-4816. The examiner can normally be reached on Mon.-Thur. and alternate Fri., 7 am- 5 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Richard Edgar  
Examiner  
Art Unit 3745

RE